CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

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Job No: CTCE/BBMP/W.No.17/MK/BM/Shape.T/2014-15 : 02.05.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Yeshwanthapura Sub Division, BBMP, Bangalore.
Agency	**: Mr. M. Krishnamurthy, Contractor, Bangalore.**
Name of Work	: Providing and laying HDPE Water line in Ganesha Temple Block - II in J P Park, Ward No.17, BBMP, Bangalore.
Reference	: EE/RRND/Wo.No/223/2013-14 Dated: 05.02.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	: Bituminious Macadum
Date of Testing	: 02.05.2014

Flakiness Index = **11.25%**

Elongation Index = **13.25%**

Result : Combined Flakiness & Elongation index **24.50%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Macadam is 30%

Note:

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Job No: CTCE/BBMP/W.No.17/MK/BM/Stripping/2014-15

03.05.2014

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	**Asst. Executive Engineer,** Yeshwanthapura Sub Division, BBMP, Bangalore.
Agency	**Mr. M. Krishnamurthy,** Contractor, Bangalore.
Name of the work	Providing and laying HDPE Water line in Ganesha Temple Block - II in J P Park, Ward No.17, BBMP, Bangalore.
Reference	EE/RRND/Wo.No/223/2013-14 Dated: 05.02.2014
Type of Mix	Bituminous Macadam
Date of Testing	03.05.2014

Type of binder : 60/70

Percentage of binder used : 5.0% by wt.

Total weight of aggregate : 200 g

Total weight of binder : 10.0 g

Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.1	3.10	96.90
2	2.9		
3	3.3		

Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Macadam is 95%

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Job No: CTCE/BBMP/W.No.17/MKS/BM/Sp_Wa/2014-15

03.05.2014

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Asst. Executive Engineer,** Yeshwanthapura Sub Division, BBMP, Bangalore.
Agency	**Mr. M. Krishnamurthy,** Contractor, Bangalore.
Name of the Work	Providing and laying HDPE Water line in Ganesha Temple Block - II in J P Park, Ward No.17, BBMP, Bangalore.
Reference	EE/RRND/Wo.No/223/2013-14 Dated: 05.02.2014
Source / Location	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	03.05.2014

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 2	
1	Weight of aggregate suspended in water with the basket	W_1 g	2025	2026	2024	
2	Weight of basket suspended in water	W_2 g	750	750	750	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1275	1276	1274	
4	Weight of saturated surface dry aggregate in air	W_3 g	2008	2010	2012	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	733	734	738	
6	Weight of oven dried aggregate	W_4 g	1994	1995	1996	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.720	2.718	2.705	2.712
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.773	2.775	2.765	2.769
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.70%	0.75%	0.80%	0.75%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Macadam is 2.0%

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Job No.: CTCE/BBMP/W.No.17/MK/BM/Bitumen/2014-15

03.05.2014

BITUMEN CONTENT DETERMINATION OF BITUMINOUS MACADAM MIX

AS per IRC:SP:-11-1984

Client	**Asst. Executive Engineer,** Yeshwanthapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. M. Krishnamurthy,** Contractor, Bangalore.
NAME OF THE WORK	Providing and laying HDPE Water line in Ganesha Temple Block - II in J P Park, Ward No.17, BBMP, Bangalore.
REFERENCE	EE/RRND/Wo.No/223/2013-14 Dated: 05.02.2014
SAMPLE I/D	HDPE Water line in Ganesha Temple Block - II in J P Park, Ward No.17.
DATE OF TESTING	03.05.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	482.5	481.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	17.5	18.50
7. Bitumen content in %	3.50	3.70
8. Average	**3.60**	

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Job No.: CTCE/BBMP/W.No.17/MK/BM/Bitumen/2014-15 03.05.2014

GRADATION DETERMINATION OF BITUMINOUS MACADAM MIX

As per IS2386 and IRC:SP:11-1984

Client	**Asst. Executive Engineer,** Yeshwanthapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. M. Krishnamurthy,** Contractor, Bangalore.
NAME OF THE WORK	Providing and laying HDPE Water line in Ganesha Temple Block - II in J P Park, Ward No.17, BBMP, Bangalore.
REFERENCE	EE/RRND/Wo.No/223/2013-14 Dated: 05.02.2014
SAMPLE I/D	HDPE Water line in Ganesha Temple Block - II in J P Park, Ward No.17.
DATE OF TESTING	03.05.2014

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0	100	100
19	35.15	7.28	7.28	92.72	90-100
13.2	84.36	17.48	24.77	75.23	56-88
4.75	258.3	53.53	78.30	21.70	16-36
2.36	62.32	12.92	91.22	8.78	4-19
0.3	26.31	5.45	96.67	3.33	2-10
0.075	4.15	0.86	97.53	2.47	0-8

Þ The results indicated above are based on the tests carried	Trail 2				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0		100	100
19	30.22	6.28	6.28	93.72	90-100
13.2	85.21	17.70	23.97	76.03	56-88
4.75	260.5	54.10	78.07	21.93	16-36
2.36	52.62	10.93	89.00	11.00	4-19
0.3	22.32	4.64	93.64	6.36	2-10
0.075	7.18	1.49	95.13	4.87	0-8

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